

REMARKS

Applicants appreciate the Examiner's thorough consideration provided the present application. Claims 1 and 4-10 are now present in the application. Claims 1, 9 and 10 have been amended in this Reply. Claim 1 is independent. Reconsideration of this application is respectfully requested.

Reasons For Entry Of Amendments

It is respectfully requested that the present amendments be entered into the Official File because the amendments to the claims are believed to place the present application into condition for allowance. In the alternative, if the Examiner persists in maintaining his rejection, it is respectfully requested that the Examiner enter the amendments for the purposes of Appeal.

Failure To Respond On The Merits To The Substance Of Each Of The Arguments

Applicant respectfully submits that the outstanding Office Action was improperly made a final Office Action, because it does not comply with MPEP §707.07(f), which requires that the Examiner respond on the merits to the substance of each of the arguments presented by applicants traversing rejections of record.

First, on page 6, lines 9-21 and page 7, lines 1-2 of the Reply filed on January 21, 2009, Applicants presented the arguments that **(1) Kim fails to teach that this tilted Bragg grating is used to deflect light out from the fiber core** and **(2) Kim would not function as intended if a tilted Bragg grating were arranged to deflect the light out from the fibers**, as follows:

Kim in FIG. 7 discloses an add-drop wavelength filter with a tilted Bragg grating 310. However, Kim simply uses this tilted Bragg grating for switching between two modes *within a dual mode optical fiber*. More specifically, Kim simply uses this tilted Bragg grating in order to switch from a fundamental mode (LP01) into a higher-order mode (LP11). Kim nowhere teaches that this tilted Bragg grating is used to deflect light *out from the fiber core*. Instead, the technology of Kim *would not function if the tilted Bragg grating were arranged to deflect the light out from the fibers*.

In addition, Kim mentions the use of a dual core fiber for an add-drop wavelength filter (see col. 2, lines 42-48) shown in FIG. 8. However, Kim also explicitly explains that the Bragg grating is written within only one core of the dual core fiber. Furthermore, as evident from FIG. 8 of Kim, the Bragg grating 350 is a plane (i.e. not tilted) grating.

Therefore, Kim fails to teach “a deflector provided in each of said first and second optical waveguide, the deflectors being arranged to deflect light propagating in one of the light guiding structures to the other light guiding structure by operation of said external resonator” as recited in claim 1.

However, the above specific arguments are not addressed in the “Response to Arguments” section of the outstanding Office Action.

Second, on page 7, lines 14-18 of the Reply filed on January 21, 2009, Applicants presented the arguments that one skilled in the art would not have the motivation to use Facq’s tilted Bragg gratings to deflect light out from an optical fiber in Kim, as follows:

Although Facq discloses tilted Bragg gratings for deflecting light out from an optical fiber, by using Facq’s tilted Bragg gratings to deflect light out from an optical fiber in Kim, Kim would not operate as intended (i.e., switching from a fundamental mode (LP01) into a higher-order mode (LP11)) if the tilted Bragg grating were arranged to deflect the light out from the fibers. Therefore, one skilled in the art would not have the motivation to use Facq’s tilted Bragg gratings to deflect light out from an optical fiber in Kim.

Again, the above specific arguments are not addressed in the “Response to Arguments” section of the outstanding Office Action.

Third, on page 7, lines 20-21 and page 8, lines 1-19 of the Reply filed on January 21, 2009, Applicants presented the arguments that **Facq simply teaches a traditional mirror and fails to teach any external resonator**, as follows:

In addition, the Examiner has correctly acknowledged that Kim fails to teach an external resonator. The Examiner then turned to rely on Facq and alleged that Facq can cure the deficiencies of Kim. Applicants respectfully disagree. In particular, although Facq discloses tilted Bragg gratings for deflecting light out from an optical fiber, such a deflected (or extracted) light is reflected from mirrors for various purposes. However, Facq nowhere discloses that the mirrors are configured to form a resonator. In fact, as shown in FIGs. 6A and 6B of Facq, the light exits from the fiber 50 and reflects once from the mirror 51, whereupon it re-enters the fiber 50 (the light as indicated by the arrows is present only on one side between the fiber 50 and the mirror 51 in FIG. 6B). In other words, *no resonance is obtained*. Similar non-resonant reflection from mirrors can be also seen in FIGs. 7, 8, 10 and 11 of Facq.

In FIG. 4 of Facq, an optical system 28 in the form of a cylindrical, ellipsoidal mirror is used for reflecting an extracted beam of light from one fiber to the other. Again, no resonance is involved. The lack of resonance can be seen directly from FIG. 4 of Facq, because the arrows showing the light path go directly from one fiber to the other without any resonance. More importantly, the ellipsoidal mirror as shown in FIG. 4 of Facq cannot produce any resonant coupling between the fibers due to its geometry.

In summary, Facq simply uses the mirrors in a traditional sense, *i.e.*, as reflecting mirrors from which light is reflected once without giving rise to any resonant phenomena. The geometry of having an ellipsoidal mirror cannot give rise to resonant coupling between two fibers according to the present invention. Facq clearly fails to teach any external resonator as recited in claim 1, and also fails to teach any resonant coupling between two fibers.

Again, the above specific arguments are not addressed in the "Response to Arguments" section of the outstanding Office Action.

Since the above specific arguments are not addressed in the "Response to Arguments" section of the outstanding Office Action and the Examiner simply repeated exactly the same contents of the rejection as presented in the previous Office Action of October 21, 2008 without

addressing the above specific arguments, the Examiner denied Applicants fundamental substantive and procedural due process under the Administrative Procedures Act.

Applicants respectfully submit that the above arguments were presented in good faith and deserve to be considered and responded to on their merits.

Claim Rejections Under 35 U.S.C. § 103

Claims 1 and 4-10 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kim, U.S. Patent No. 6,640,024, in view of Facq, U.S. Patent No. 5,307,437. This rejection is respectfully traversed.

A complete discussion of the Examiner's rejection is set forth in the Office Action, and is not being repeated here.

Independent claim 1 now recites a combination of elements including "a deflector provided in each of said first and second optical waveguide, the deflectors being arranged to deflect light propagating in one of the light guiding structures to the other light guiding structure by operation of said external resonator, wherein the deflector in at least one of said first and second optical waveguides comprises: a first blazed Bragg grating arranged in said at least one of said first and second optical waveguides, and a second blazed Bragg grating arranged in said at least one of said first and second optical waveguides, wherein said first blazed Bragg grating and said second blazed Bragg grating are superimposed upon each other, and oriented at different angels to deflect light out from said at least one of said first and second optical waveguides into two anti-parallel beams." Applicants respectfully submit that the combination of elements as set

forth in independent claim 1 is not disclosed or suggested by the references relied on by the Examiner.

As mentioned in the last Reply of January 21, 2009 (which is re-presented in the above-noted "Failure To Respond On The Merits To The Substance Of Each Of The Arguments" section), Kim simply uses this tilted Bragg grating for switching between two modes *within a dual mode optical fiber*, not for deflecting light *out from the fiber core*.

Although Facq discloses tilted Bragg gratings for deflecting light out from an optical fiber, by using Facq's tilted Bragg gratings to deflect light out from an optical fiber in Kim, Kim would not operate as intended (i.e., switching from a fundamental mode (LP01) into a higher-order mode (LP11)) if the tilted Bragg grating were arranged to deflect the light out from the fibers. Therefore, one skilled in the art would not have the motivation to use Facq's tilted Bragg gratings to deflect light out from an optical fiber in Kim.

Accordingly, Kim in view of Facq fails to teach "a deflector provided in each of said first and second optical waveguide, the deflectors being arranged to deflect light propagating in one of the light guiding structures to the other light guiding structure by operation of said external resonator" as recited in claim 1.

In addition, the Examiner has correctly acknowledged that Kim fails to teach an external resonator. Although the Examiner referred to the mirror 28 of Facq as the external resonator, as mentioned in the last Reply of January 21, 2009 (which is re-presented in the above-noted "Failure To Respond On The Merits To The Substance Of Each Of The Arguments" section), Facq's mirror 28 is simply used as a reflecting mirror from which light is reflected once *without giving rise to any resonant phenomena*. More specifically, Facq's mirror 28 in the form

of a cylindrical, ellipsoidal mirror is used for reflecting an extracted beam of light from one fiber to the other with no resonance involved. The lack of resonance can be seen directly from FIG. 4 of Facq, because the arrows showing the light path go directly from one fiber to the other *without any resonance (i.e., no standing wave exists)*. *More importantly, the ellipsoidal mirror as shown in FIG. 4 of Facq cannot produce any resonant coupling between the fibers due to its geometry.*

Similary, as shown in FIGs. 6A and 6B of Facq, the light exits from the fiber 50 and reflects once from the mirror 51, whereupon it re-enters the fiber 50 (the light as indicated by the arrows is present only on one side between the fiber 50 and the mirror 51 in FIG. 6B). In other words, *no resonance is obtained becasue no stanting wave exists*. Similar non-resonant reflection from mirrors can be also seen in FIGs. 7, 8, 10 and 11 of Facq. Therefore, Facq nowhere discloses that the mirrors are configured to form a resonator. Accordingly, Facq also fails to cure the deficnecies of Kim and therefore fails to teach “an external resonator defined by a first and a second mirror, said first and said second mirror being provided on opposite sides and outside of said first and second light guiding structures, and said external resonator being resonant to a specific wavelength” as recited in claim 1.

Response to the Examiner’s “Response to Applicant’s Arguments”

The Examiner in the “Response to Applicant’s Arguments” section of the outstanding Office Action responded to Applicants’ arguments regarding the recitation “wherein said first tilted deflector and said second tilted deflector are superimposed upon each other, and arranged to deflect light out from said at least one of said first and second optical waveguides into two

individual beams” as recited in claim 1. However, Applicants do not understand the Examiner’s rationales.

In particular, although the Examiner alleged that Kim teaches an optical switch 300 comprising a first optical waveguide 280 and a second optical waveguide 290 with tilted blazed gratings 310 (in fact, only a single tilted blazed grating 310 in FIG. 7 of Kim), Kim nowhere discloses two tilted blazed gratings superimposed upon each other in any one of the waveguides 280 and 290 as recited in claim 1. In addition, as shown in FIG. 7 of Kim, the single tilted blazed grating 310 is simply oriented at the same angle, not oriented *at different angels* as recited in claim 1. Furthermore, since Kim’s single tilted blazed grating 310 is simply oriented at a single angle, it cannot deflect the light into two anti-parallel beams as recited in claim 1.

Therefore, Kim fails to teach “wherein the deflector in at least one of said first and second optical waveguides comprises: a first blazed Bragg grating arranged in said at least one of said first and second optical waveguides, and a second blazed Bragg grating arranged in said at least one of said first and second optical waveguides, wherein said first blazed Bragg grating and said second blazed Bragg grating are superimposed upon each other, and oriented at different angels to deflect light out from said at least one of said first and second optical waveguides into two anti-parallel beams” as recited in claim 1.

In addition, the Examiner alleged that Facq in FIG. 4 teaches an optical switch 30 comprising two tilted blazed gratings waveguides 20 and 21. However, Facq in col. 5, lines 1-8 simply discloses that the Bragg lattice 29 is located in the fiber 20 and Bragg lattice 30 is located in the fiber 21. Facq nowhere discloses that the Bragg lattice 29 and the Bragg lattice 30 are superimposed upon each other in the same fiber (waveguide). In addition, Facq nowhere

discloses that the Bragg lattice 29 and the Bragg lattice 30 are oriented at different angles. In fact, as shown in FIG. 5 of Facq, two Bragg lattices are oriented at the same angle, and the light deflected by the two Bragg lattices are parallel in the same direction, not parallel in opposite directions (i.e., anti-parallel).

Therefore, Facq also fails to teach “wherein the deflector in at least one of said first and second optical waveguides comprises: a first blazed Bragg grating arranged in said at least one of said first and second optical waveguides, and a second blazed Bragg grating arranged in said at least one of said first and second optical waveguides, wherein said first blazed Bragg grating and said second blazed Bragg grating are superimposed upon each other, and oriented at different angles to deflect light out from said at least one of said first and second optical waveguides into two anti-parallel beams” as recited in claim 1.

Accordingly, neither of the utilized references individually or in combination teaches or suggests the limitations of independent claim 1. Therefore, Applicants respectfully submit that independent claim 1 clearly defines over the teachings of the utilized references.

In addition, claims 4-10 depend, either directly or indirectly, from independent claim 1, and are therefore allowable based on their respective dependence from independent claim 1, which is believed to be allowable.

In view of the above remarks, Applicants respectfully submit that claims 1 and 4-10 clearly define the present invention over the references relied on by the Examiner. Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. § 103 are respectfully requested.

Additional Cited References

Since the remaining patents cited by the Examiner have not been utilized to reject the claims, but rather to merely show the state of the art, no further comments are necessary with respect thereto.

CONCLUSION

All the stated grounds of rejection have been properly traversed and/or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently pending rejections and that they be withdrawn.

It is believed that a full and complete response has been made to the Office Action, and that as such, the Examiner is respectfully requested to send the application to Issue.

In the event there are any matters remaining in this application, the Examiner is invited to contact Cheng-Kang (Greg) Hsu, Registration No. 61,007 at (703) 205-8000 in the Washington, D.C. area.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicants respectfully petition for a one (1) month extension of time for filing a response in connection with the present application.

Application No.: 10/520,478
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Reply to Office Action of April 16, 2009

Docket No.: 0104-0500PUS1

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

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